

Claims:

- 1 1. A collapsible support structure, comprising:
 - 2 a plurality of interconnected frame sections each comprising:
 - 3 a first elongated rigid member having a first end and a second
 - 4 end;
 - 5 a second elongated rigid member having a first end and a
 - 6 second end;
 - 7 wherein the first ends of the first elongated rigid member and
 - 8 the second elongated rigid member are hingedly joined;
 - 9 a collapsible elongated member comprising:
 - 10 an elongated flexible tensioning member connected
 - 11 between the second end of the first elongated rigid
 - 12 member and the second end of the second elongated
 - 13 rigid member;
 - 14 a first hollow tubular rigidizing member extending
 - 15 along a portion of the length of the elongated flexible
 - 16 tensioning member;
 - 17 a second hollow tubular rigidizing member extending
 - 18 along essentially the remainder of the length of the
 - 19 elongated flexible tensioning member; and
 - 20 a rigidizing sleeve member slideably mounted on the
 - 21 first or the second hollow tubular rigidizing member
 - 22 and sized to slideably engage the other of the first and
 - 23 second hollow tubular rigidizing member when the first
 - 24 and second hollow tubular rigidizing members are
 - 25 essentially axially aligned and the rigidizing sleeve
 - 26 member is positioned to slideably engage each of the
 - 27 hollow tubular rigidizing members to form a collapsible

28 elongated tubular member extending essentially
29 between the second ends of each of the first and second
30 elongated rigid members and having the elongated
31 flexible tensioning member axially disposed therein.

1 2. The structure of claim 1 wherein the interconnected frame sections each
2 form a triangle.

1 3. The structure of claim 1 wherein the interconnected frame sections each
2 form a portion of a geodesic structure.

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1 4. The structure of claim 1 wherein the interconnected frame sections form a
2 portion of a truncated icosahedron.

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1 5. The structure of claim 4 wherein the interconnected frame sections for a
2 portion of an upstanding portion of an icosahedron structure extending
3 between a first and a second lesser circle polygonal shape, with the hinged
4 joined first ends of the first and second elongated rigid members being
5 joined at a corner of the first lesser circle polygonal shape and the
6 collapsible elongated tubular member forming a side of the second lesser
7 circle polygonal shape.

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1 6. A collapsible support structure, comprising:

2 a plurality of interconnected frame sections each comprising:

3 a first elongated one-piece rigid member having a first end and
4 a second end;

5 a second elongated one-piece rigid member having a first end
6 and a second end;

7 wherein the first ends of the first elongated one-piece rigid
8 member and the second elongated one-piece rigid member are
9 hingedly joined;
10 a collapsible elongated member comprising:
11 an elongated flexible tensioning member connected
12 between the second end of the first elongated rigid
13 member and the second end of the second elongated
14 rigid member;
15 a first hollow tubular rigidizing member extending
16 along a portion of the length of the elongated flexible
17 tensioning member;
18 a second hollow tubular rigidizing member extending
19 along essentially the remainder of the length of the
20 elongated flexible tensioning member; and
21 a rigidizing sleeve member slideably mounted on the
22 first or the second hollow tubular rigidizing member
23 and sized to slideably engage the other of the first and
24 second hollow tubular rigidizing member when the first
25 and second hollow tubular rigidizing members are
26 essentially axially aligned and the rigidizing sleeve
27 member is positioned to slideably engage each of the
28 hollow tubular rigidizing members to form a collapsible
29 elongated tubular member extending essentially
30 between the second ends of each of the first and second
31 elongated one-piece rigid members and having the
32 elongated flexible tensioning member axially disposed
33 therein.

- 1 7. The structure of claim 6 wherein the interconnected frame sections each
2 form a triangle.
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- 1 8. The structure of claim 6 wherein the interconnected frame sections each
2 form a portion of a geodesic structure.
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- 1 9. The structure of claim 6 wherein the interconnected frame sections form a
2 portion of a truncated icosahedron.
- 1 10. The structure of claim 9 wherein the interconnected frame sections form
2 a portion of an upstanding portion of an icosahedron structure extending
3 between a first and a second lesser circle polygonal shape, with the hingedly
4 joined first ends of the first and second elongated rigid members being
5 joined at a corner of the first lesser circle polygonal shape and the
6 collapsible elongated tubular member forming a side of the second lesser
7 circle polygonal shape.
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- 1 11. A collapsible support structure, comprising:
2 a plurality of interconnected frame sections each comprising:
3 a first elongated rigid member having a first end and a second
4 end;
5 a second elongated rigid member having a first end and a
6 second end;
7 a third elongated rigid member having a first end and a second
8 end;
9 wherein the first ends of the respective first elongated rigid
10 member and the second elongated rigid member are hingedly
11 joined, and the second ends of the respective second elongated

12 rigid member and the third elongated rigid member are
13 hingedly attached;
14 a first and a second collapsible elongated member, each
15 comprising:
16 an elongated flexible tensioning member connected
17 respectively between the second end of the of the first
18 elongated rigid member and the second end of the
19 second elongated rigid member and between the hinged
20 connection of the first ends of the respective first and
21 second elongated rigid members and the first end of the
22 third elongated rigid member;
23 a first hollow tubular rigidizing member extending
24 along a portion of the length of the respective elongated
25 flexible tensioning member;
26 a second hollow tubular rigidizing member extending
27 along essentially the remainder of the length of the
28 respective elongated flexible tensioning member; and
29 a rigidizing sleeve member slideably mounted on the
30 first or the second hollow tubular rigidizing member
31 and sized to slideably engage the other of the first and
32 second hollow tubular rigidizing members when the
33 first and second hollow tubular rigidizing members are
34 essentially axially aligned and the rigidizing sleeve
35 member is positioned to slideably engage each of the
36 hollow tubular rigidizing members to form a collapsible
37 elongated tubular member extending essentially
38 between respectively the second ends of each of the
39 first and second elongated rigid members and the
40 hinged connection of the first ends of the first and

41 second elongated rigid members and the first end of the
42 third elongated rigid member, the having the respective
43 elongated flexible tensioning member axially disposed
44 therein.

1 12. The structure of claim 11 wherein the interconnected frame sections each
2 form a parallelogram comprising two interconnected triangles sharing the
3 second rigid elongated member as one side of the respective triangles

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1 13. The structure of claim 11 wherein the interconnected frame sections each
2 form a portion of a geodesic structure.

1 14. The structure of claim 11 wherein the interconnected frame sections
2 form a portion of a truncated icosahedron.

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1 15. The structure of claim 14 wherein the interconnected frame sections
2 form a portion of an upstanding portion of a icosahedron structure extending
3 between a first and a second lesser circle polygonal shape, with the hingedly
4 joined first ends of the first and second elongated rigid members being
5 joined at a corner of the first lesser circle polygonal shape and the second
6 collapsible elongated tubular member forming an adjacent side of the first
7 lesser circle polygonal shape, and with the hinged connection of the second
8 ends of the second and third elongated rigid members forming a corner of
9 the second lesser circle polygonal shape and the second collapsible
10 elongated tubular member forming an adjacent side of the second lesser
11 circle polygonal shape.

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